NAME: DATE:

Unit-2 Mastery Assessment (version 628)

Question 1 (10 points)

Let f represent a function. If $f[2] = 21$, then there exists a knowable solution to the equation below.

$$y = 7 \cdot \left(f\left[\frac{x+4}{24} \right] - 19 \right)$$

Find the solution.

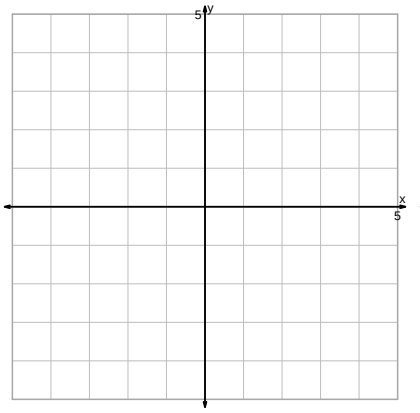
$x =$

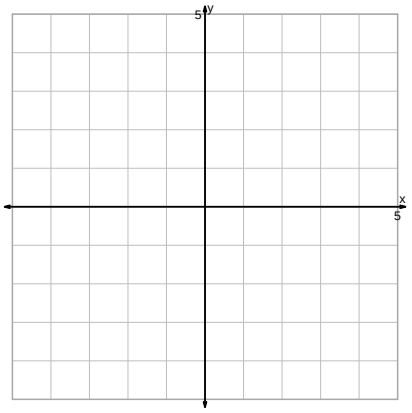
$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

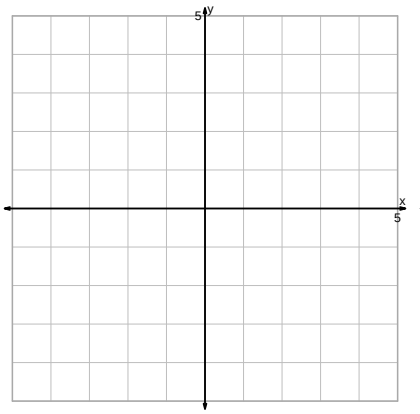
$y = (x-2)^3$

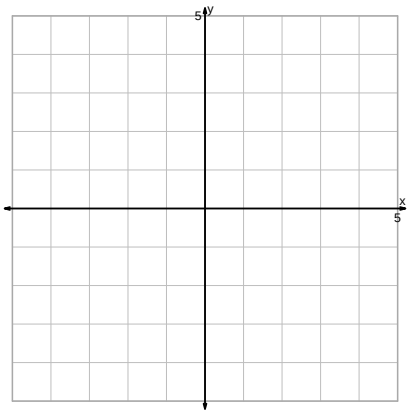




$y = \frac{\sqrt{x}}{2}$

$y = 2^{2x}$

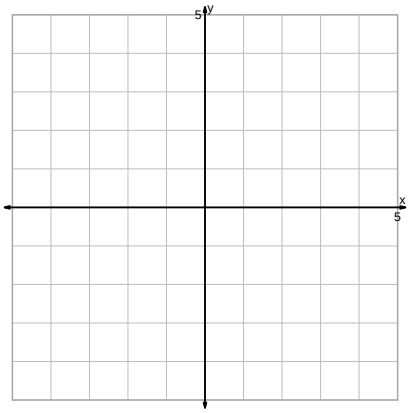


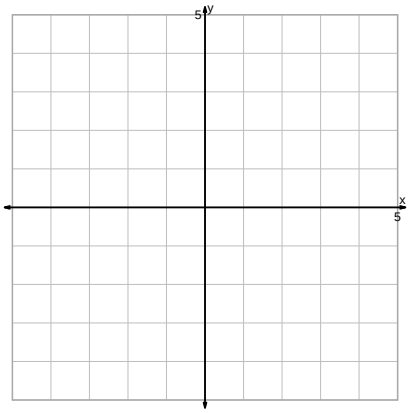


$y = \sqrt[3]{x} - 2$

Question 2 continued...

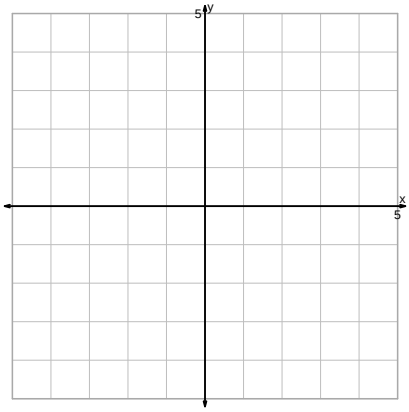
$y = -\log_2(x)$

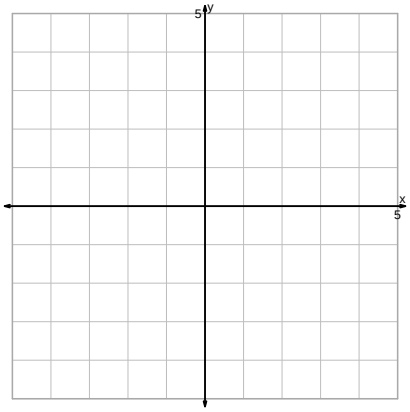




$y = x^3 + 2$

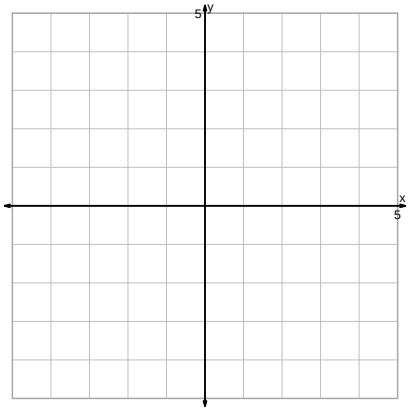
$y = 2^{-x}$

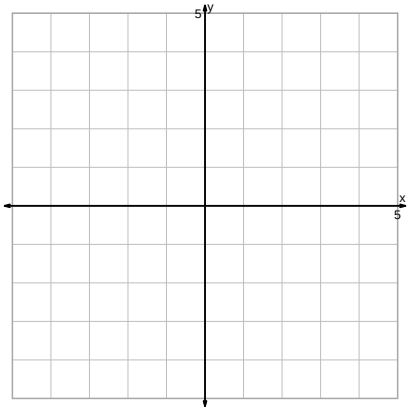




$y = 2 \cdot x^2$

$y = \log_2\left(\frac{x}{2}\right)$

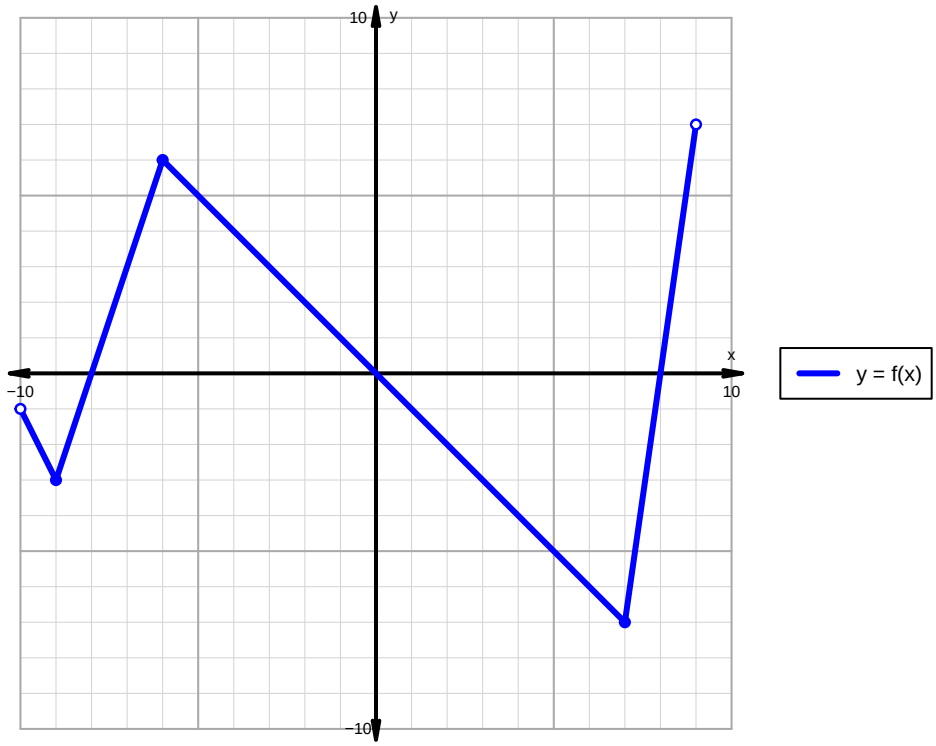




$y = (x+2)^2$

Question 3 (20 points)

A function is graphed below.



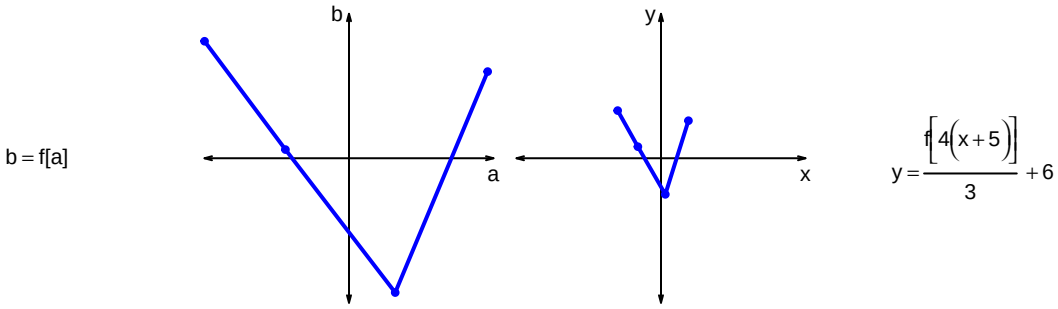
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[4(x+5)]}{3} + 6$ are represented below in a table and on graphs.

a	b	x	y
-100	81	-30	33
-44	6	-16	8
32	-93	3	-25
96	60	19	26



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[4(x+5)]}{3} + 6$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

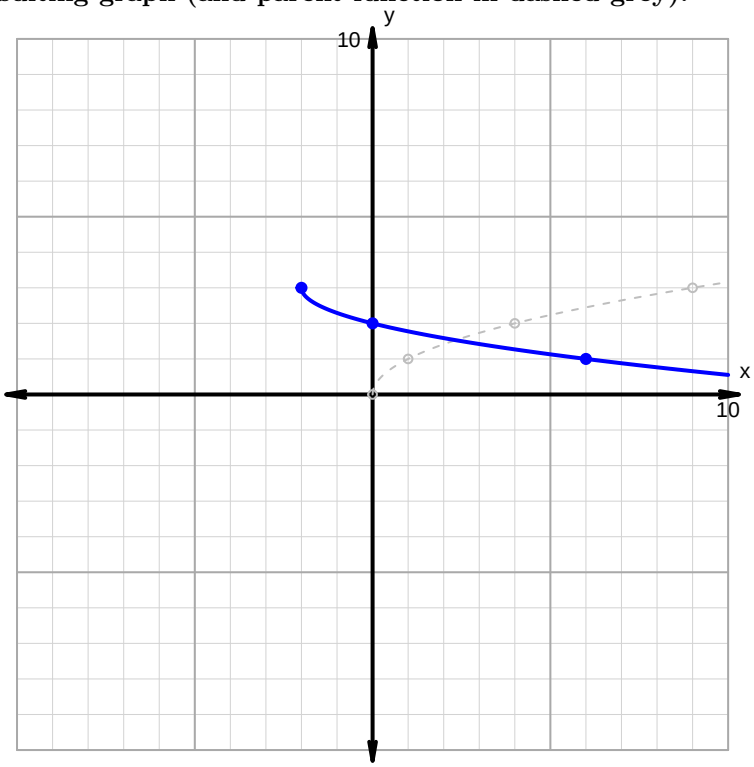
Horizontal transformations

1. Translate left by distance 1.
2. Horizontal stretch by factor 2.

Vertical transformations

1. Translate down by distance 3.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

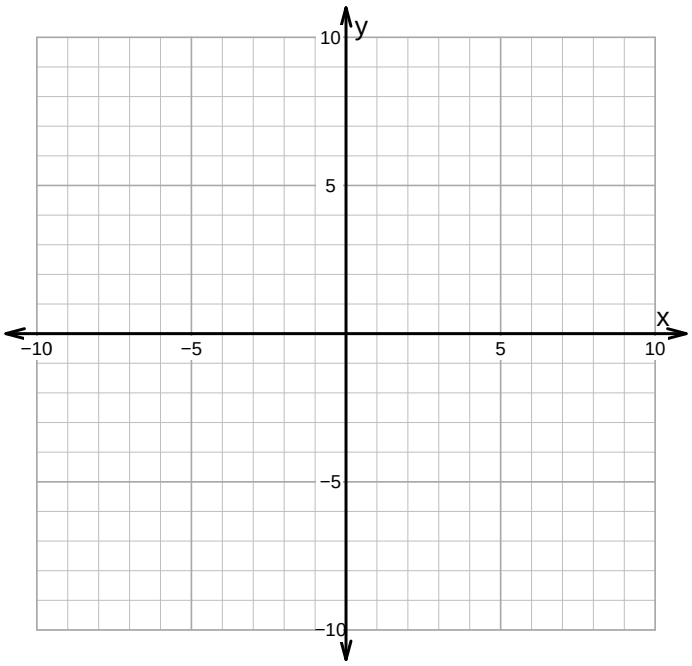


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y \;=\; 3 \cdot |x - 7| - 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	